PRODUCT CATALOGUE

Æ∕A T.M.

Advanced Electronic Applications, Inc.

AEA Computer Patch™ Interface model CP-I

Now you can easily convert your personal computer and transceiver into a full-featured RTTY station with the CP-1 Computer Patch™ interface and software by AEA. The CP-1 is a professional quality RTTY/CW terminal unit which cuts no corners on sensitivity, selectivity, and reliability.

The CP-1 Computer Patch™ is easy for an inexperienced RTTY operator to hook up and operate, but is still very appealing to the more experienced and sophisticated RTTY user. The CP-1 is a moderately priced, high performance, full-featured terminal unit, which utilizes reliable innovative design in the style you have come to expect from Advanced Electronic Applications. It includes many extra features not offered in other popular units, yet is competitively priced.

With the tremendous price drop in personal computers, your total system cost is far below that of dedicated RTTY/CW systems.

The Mark and Space frequencies each have an active 4 pole filter to provide greatly improved performance compared to the popular single channel RTTY detectors. An easy to use AEA magic-eye bargraph tuning indicator gives fast and accurate CW and RTTY tuning. This indicator is ideal for RTTY and CW because it is within 10Hz, as accurate as scope tuning. In addition, there are separate Mark/Space scope output jacks provided. A state-of-the-art multi-stage active filter is incorporated, offering pre and post limiter filtering and floating reference comparator (automatic threshold correction) circuit, giving the best possible

copy under weak and fading signal conditions. Additionally, the CP-1 offers variable shift tuning designed to move the space filter center frequency from 2225Hz to 3125Hz for shifts of 100Hz to 1000Hz. By varying the Q of the filter the bandwidth is constant. This design has the advantage of using a sharp filter which reduces the noise bandwidth significantly and allows the variable shift control to be used like passband tuning for extra elimination of adjacent channel interference. Coupled with the front panel Normal/ Reverse tone selector, the CP-1 has the capacity to decode virtually any tone shift in popular use today.
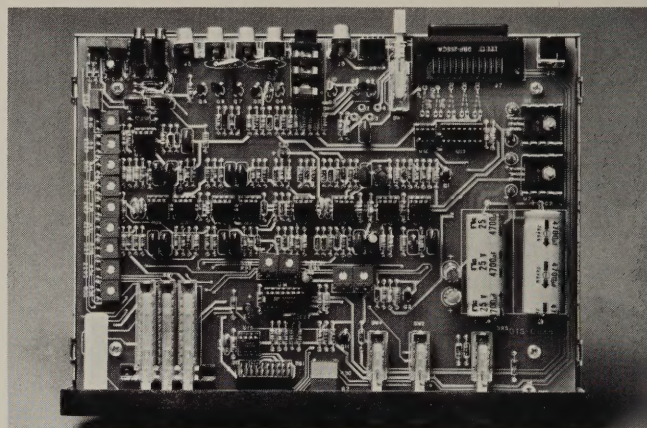
A sine wave generator is utilized for clean stable AFSK tone output to the transmitter. Both plus (+) and minus (−) keyed output jacks are provided for CW keying of virtually all popular transmitters. Automatic transmit/receive switching is available under computer control or from a front panel manual transmit button. Output and computer control signals are available in the usual TTL levels. The RS-232 input/output levels are available as an option.

Power requirements for the CP-1 are provided by a 117 VAC wall adaptor unit which is supplied. The CP-1 Computer Patch™ is housed in an attractive aluminum enclosure and is certified to comply with the limits for a class B computing device pursuant to subpart J of part 15 of FCC rules. The CP-1 measures 10" wide x 2¾" high x 8¼" deep and weighs approximately 1½ pounds.

You can now experience the best RTTY, CW, and AMTOR offered. Couple the CP-1 with our new AEASOFT™ software packages designed for the MARS, SWL, or amateur radio operator. Feel a pride reminiscent of what "made in U.S.A." brought in years gone by. See your favorite dealer for a demonstration of the CP-1 today.

AEA Brings you the Breakthrough!

- Digital Radio Communication — computer to computer
- Every PKT-1 station is a Digipeater (repeater)
- Multiple conversations on a simplex channel
- Send computer files error free
- Simple to use — 5 usual commands
- Only extra equipment required is RS 232 terminal/computer and radio
- Customer's 9-15 VDC power allows mobile/portable operation
- 1 year warranty and applications help
- No kit building — a complete Packet Controller
- Uses TAPR circuit and software
- Talk to more than 1000 stations on VHF, UHF, HF, Oscar, etc.
- 110-9600 Baud operation
- AX.25 and VADCG protocols
- Packet Newsletter and HF information net available
- Built-in calibration — no test gear needed
- Comprehensive operator's manual (tech manual available)
- 2 microprocessors allows non-interrupt operation
- Up to 64K on-board RAM/ROM for program/buffer/message memory
- Easy hookup to radio and computer or terminal (4 wire MIC connector/RS232)
- Squelch input for busy channel Xmit inhibit

The PKT-1 provides an easy way for the Radio Amateur, government agency, or small business to set up error free data or computer file communication links with hard copy capability. In this age of computers and data base access, dedicated phone lines are expensive and regular ones are slow. Digital radio provides an alternative, and is more reliable than phone in the event of an emergency.

A Packet Radio station sends a fractional second burst of AFSK/FSK encoded (ASCII, etc.) data and message handling bytes in a "packet". The receiving station PKT-1 decodes the packet and sends it to a terminal or computer via RS232 where it is displayed, printed, or stored for later use.

The PKT-1 was developed in conjunction with the Tuscon Amateur Packet Radio group. It is a fully assembled and warranted DC-operable version of the TAPR kit board.

The PKT-1 packet controller provides several differences when compared to voice, RTTY or AMTOR modes. There is the capability of hard copy, and data is essentially error free. Multiple conversations can exist on a single channel (time division multiplexing). Store-and-forward digipeating through up to 8 regular PKT-1 intermediate stations allows VHF communication over non line-of-sight paths or paths too long for single hop VHF.

Packets sent by the PKT-1 are error checked using Cyclic Redundancy Check (CRC) in the PKT-1. Because of the burst nature of packet, packets from other conversations fit in before and after your packets, and you see only those addressed to you.

You may run modulation modes such as AFSK, FSK, PSK at HF, VHF, UHF, microwave and satellite frequencies. HF usually runs at 300 Baud, and VHF uses 1200.

The PKT-1 board contains a bypassable built-in Bell 202 style modem. It contains two processors, one of which encodes and decodes the packets. There is 32K of firmware, and 8K x 8 of static ram for buffering, as well as non-volatile ram for power-down storage of operating parameters. An RS232 interface is included, as well as sockets. The board is through-hole plated, nomenclated epoxy glass. Status LEDs and controls are on the front panel. Connection to the radio consists of PTT, audio in, and AFSK out. RS232 goes to the terminal or computer.

The PKT-1 will be supported as AEA and TAPR continue to improve the design. Applications assistance in getting started and operating is available to PKT-1 purchasers. There are over 1000 TAPR board owners now, with 20 users or so in a typical larger city, so there are plenty of people to talk to. You may subscribe to the Packet Status Register, a TAPR publication. There is also an HF voice net weekly with lots of operating hints.

Lots of bulletin boards exist, and you can leave or pickup your data and text messages, read information bulletins, and so forth. AEA can recommend terminal programs for your computer which will allow you to return to your station at day's end and read your mail.

The PKT-1 will input squelch info from your radio to inhibit xmit in the event the channel is busy with voice traffic. You may therefore coexist with voice traffic, (and on voice repeaters) with the operator's permission.

PKT-1 Rear View

MODEL PKT-1 PACKET CONTROLLER SPECIFICATIONS

Processors
- Motorola 6809 8 bit Microprocessor
- Western Digital 1935 HDLC (Highlevel Data Link Controller)

Input/Output
- RS232 (DB25S connector) serial port
  Baud rates: 50 to 19200
  Autobaud operation on 110, 300, 1200, 4800, 9600
- Power: see below
- PTT (push to talk) output for +PTT voltage radios
- Parallel Port (optional): 6520 PIA
- Audio In/loop thru output
- Squelch input for busy channel xmit inhibit

Memory
- ROM: 32K; 2764 program storage
- RAM: 8K; 6264 data buffer
- RAM: expandable to 32K
- NOVRAM: 128 bytes nonvolatile ram; Xicor 2212

Modem
- AFSK (1200, 2200 Hz), Bell 202
- 300 Baud HF, 1200 Baud VHF
- Onboard calibration routines
- Bypassable to use external modem
- Exar 2211 demod; 2206 AFSK generator; MF-10 4 pole switched capacitor filter

Protocols
- AX.25 and Vancouver VADCG, software switchable, full or half duplex radio data link

Operation Modes
- Command: accepts control commands via serial or parallel port
- Conversation: data input, packet T/R, editing (character/line/packet deletion, input redisplay)
- Transparent: digital data input, transmit via packet completion timer, receive packets, no editing

Controls
- Switches: power on, hard reset, NOVRAM bank select, NOVRAM disconnect

Indicators
- LEDs: power on, audio carrier, data carrier detect, PTT (push to talk), transmit data

Power
- Connector: 3.5 mm, center pin positive
- Voltage: 9-15 volts DC
- Current: 1 amp, fused at 2 amp
- Overvoltage: fuse blows at 18 v DC
- Optional Power Supply: AEA Model AC-4 1A DC
- Reverse polarity protected
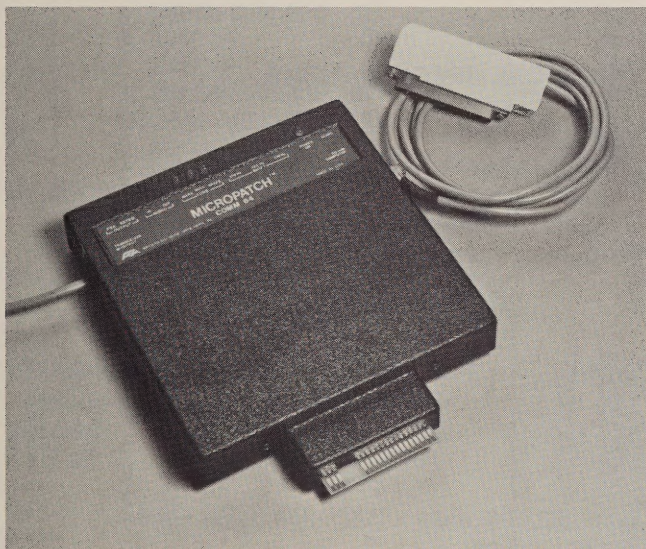
MICROPATCH™
Computer Interface by AEA

The MICROPATCH Model MP-20 or MP-64 is a complete plug-in Morse, Baudot, and ASCII hardware/software system for the Vic-20 or C-64 computers, respectively. The software portion of the package is the popular AEA MBATEXT™ (see features on page 7).

The MICROPATCH™ Model MAP-64/2 offers the user a complete hardware and full-featured MBA-TOR™ AEA software package for use in Morse, RTTY, ASCII and AMTOR communication modes. The MAP-64/2 plugs into the game cartridge slot of the popular Commodore 64 personal computer.

The MP-20, MP-64, and MAP-64/2 come complete with keyboard overlay and operator's manual and operate from any external 12VDC power supply such as the AC-1 (not included).

HARDWARE FEATURES
(MP-20, MP-64, MAP-64/2)

- Easy hook-up to transceiver;
- True multi-stage four pole Chebyshev active dual-channel filters for Mark and Space;
- Automatic threshold correction circuit (ATC) for good copy when one tone is lost in QRM or selective fading. (Not a low-cost phase-locked-loop detector);
- 170 Hz shift or 850 Hz wide shift for receive;
- 800 Hz multi-stage active CW receive filter;
- Easy, positive tuning with triple LED tuning indicator;
- AFSK sine wave output;
- FSK output;
- Plus or minus CW output keying;
- Automatic PTT;
- Scope outputs available;
- Operates from user supplied 12VDC (reduces drain on host computer);
- Meets FCC RFI specifications;

- True spectral display shows both mark and space tones
- 10hz resolution for the tuning accuracy of a scope without the expense of a scope
- Allows fast and easy tuning of RTTY signals
- Ideal for difficult to tune AMTOR signals
- Displays 170, 425 and 850hz standard shifts
- Shows non-standard shifts for easy tuning
- High sensitivity (50 mv)
- Also indicates noise and upside-down signals
- Audio driven - easy hook up - compact size
- Built in speaker - can be switched on or off
- Works with any interface
- Does not require scope outputs
- Requires 12vdc at less than 60ma
- Complete with manual and connectors

The TI-1 is a spectral display unit for tuning RTTY or ASCII signals. It presents a bargraph display of the two frequencies (mark, space) in the AFSK signal presented to your radio or received from the other station. The two frequencies are each represented by a lit bargraph segment(s). The operator tunes the radio such that the lit segments are positioned over panel cursor markings indicating the proper frequencies. Radio tuning is correct at that point.

Noise level problems can be diagnosed from the display, as well as improper shift and "upside-down" signals. Additionally you may tune AMTOR signals with the TI-1, and with simple resistor value modifications, you may use the TI-1 as a Packet Radio tuning indicator on either the HF or VHF (UHF) bands.

A speaker is included so you may monitor the audio. It may be turned off once you have your signal properly tuned.

The TI-1 operates from your station +12VDC supply. As an option you may purchase an AEA AC-1 wall adaptor power supply. The TI-1 connects to the audio line from your receiver speaker. An extra audio jack is provided for connecting to your computer interface.

TECHNICAL SPECIFICATIONS

Input level: 50mv to 1v RMS
Monitor speaker: 8 ohms, 250mw
Power required: +13.5VDC ± 1.5VDC at 60 ma.
Display: 20 segment bargraph
Frequency ranges and resolution: See Table 1

Table 1

SHIFT	FREQUENCY RANGE	RESOLUTION
170 HZ	2093 - 2325 HZ	12 HZ
425 HZ	2050 - 2625 HZ	30 HZ
850 HZ	1975 - 3125 HZ	60 HZ

Size: 5.3½½ wide x 2.8" high x 1.8" deep
Weight: 11 oz.

AEASOFT™ Software for MORSE/BAUDOT/ASCII/AMTOR, MARS and SWL Users – Compatible with Commodore 64 or VIC-20

AEASOFT™ SOFTWARE FEATURES	MBATEXT™	MBA-TOR™	MARSTEXT™	SWLTEXT™
MORSE, BAUDOT, AND ASCII	YES	YES	YES	YES
AMTOR	NO	YES	NO	YES
PLUG-IN CARTRIDGE	YES	YES	YES	YES
RTTY & ASCII SPEED ESTIMATE	YES	YES	YES	YES
CW SPEED LOCK	YES	YES	YES	YES
CW AUTO SPEED TRACKING	YES	YES	YES	YES
FARNSWORTH LOW SPEED CW TX	YES	YES	YES	n/a
CW BREAK-IN MODE	YES	YES	NO	n/a
BREAK-IN BUFFER FOR MORSE, BAUDOT, AND ASCII	YES	YES	YES	n/a
TRANSMIT RX TEXT WITHOUT DISK OR CASSETTE	YES	YES	YES	n/a
TOGGLE QSO BUFFER ON OR OFF	YES	YES	YES	YES
WORD PROCESSING STYLE TEXT EDITOR	YES	YES	YES	YES
KEYBOARD OVERLAY INSTRUCTIONS	YES	YES	YES	YES
PRECOMPOSE SPLIT SCREEN	YES	YES	YES	n/a
WORD WRAP	YES	YES	YES	YES
TIME OF DAY CLOCK	YES	YES	YES	YES
WORD OR CHARACTER MODE	YES	YES	YES	n/a
PRINTER OUTPUT	YES	YES	YES	YES
DISK AND CASSETTE INTERFACE	YES	YES	YES	YES
UNSHIFT ON SPACE SELECTABLE	YES	YES	YES	YES
RTTY BLANK FILL	YES	YES	NO	n/a
MORSE BLANK FILL	YES	YES	NO	n/a
CW I.D. ON RTTY	NO	YES	NO	n/a
AUTO PUSH TO TALK	YES	YES	YES	n/a
ON SCREEN STATUS DISPLAY	YES	YES	YES	YES
SELCALL PRINTER CONTROL/WRU	NO	YES	NO	n/a
SAVE RX TEXT TO DISK OR TAPE	YES	YES	YES	YES
COLOR SELECT	NO	YES	NO	YES
INSERT QSO STATION'S CALL INTO ANY BUFFER	NO	YES	NO	n/a
10 SOFT-PARTITIONED™ MEMORY BUFFERS	YES	YES	YES	n/a
SELECTABLE LINE LENGTH	NO	NO	YES	n/a
AUTOMATIC MESSAGE STORAGE TO DISK	NO	NO	YES	NO
SPECIAL MARS PROTOCOLS (i.e. CR-CR-LF)	NO	NO	YES	n/a
AMTOR AUTO RESPONSE (UNATTENDED)	n/a	YES	n/a	n/a
AMTOR AUTO BEACON	n/a	YES	n/a	n/a
AMTOR AUTO CALL (MESSAGE FORWARD)	n/a	YES	n/a	n/a
TIMING ANALYSIS	NO	NO	NO	YES
KATAKANA MORSE	NO	NO	NO	YES
CYRILLIC MORSE	NO	NO	NO	YES
THIRD REGISTER CYRILLIC RTTY	NO	NO	NO	YES
BIT INVERSION & TRANSPOSITION DECODING	NO	NO	NO	YES

Compare These Features to the Competition

Software for Other Computers

For those individuals with personal computers other than Commodore, AEA has commissioned several independent programmers to develop and support a line of full-featured communication software programs for some of the most popular computers used by amateurs today.

While these programs were not designed in-house by AEA, they do meet our standards of acceptance for use with AEA amateur computer interfaces and are highly recommended for the non-Commodore computer user.

CP-1/APPLE-1

This software package includes a connecting cable to the AEA Computer Patch and the Apple computer I/O game socket. The software allows you to send and receive Morse and RTTY (in ASCII and Baudot). It features split screen operation, type ahead buffering, multi-speed operation, CW ID, retransmit capability, stored message retrieval from buffer or disk, stored keyword messages, text editing, a contact logging program, choice of word or character modes, choice of RTTY fill character, inverted RTTY operation, automatic return to receive mode upon end of transmission, automatic CR, LF, LTRS mode at the beginning of transmission or within the text and inverted stored text from disk.

CP-1/IBM-PC

HAMCOM is a complete ham communications program. This program is in compiled BASIC and requires an IBM-PC, DOS 1.1, 64k of RAM, a serial port and at least one double side disk drive. The terminal unit used with this packages requires a serial RS-232 I/O port such as the RS-232 option for the Computer Patch™.

This software allows you to send and receive ASCII at 110, 300 or any other baud rates or combination of bits, bauds, parity, or stop bits allowed by DOS. Send and receive Baudot at 60, 66, 75 or 100 WPM and CW at any speed up to 100 WPM. You may split the screen in any ratio that you want. The windows are divided by a reverse video "status" line that shows code speed, TX or RX, local time and date, Zulu time, disk save and printer status, diddle and WRU setting. There is also a preview line that displays information for your review before insertion into the buffers. You can select any TX line width from 30 to 80 characters. RX and pre-composed text utilize the full 80 character width and feature automatic wrap around and end of line. Extra line feeds may also be ignored. There are ten message buffers of 256 characters in each code (total of 30). Both TX and RX text can be reused, deleted, and inserted anytime and anywhere in your text. It can also be saved to disk and/or printed. There are TX and RX "type ahead" buffers with virtually no limit in capacity. Transmitter control is automatic with the option to return to RX after end of TX. All signals and control I/O is via the 25 pin RS-232 connector. Complete instructions are on the disk and can be called from the main menu.

CP-1/H-89-1

This program is used for RTTY (in ASCII and Baudot) and Morse operation and is compatible with the Heath/Zenith H-89 computer. It has menu selectable modes and speeds with a tri-level split screen. The available ASCII rates are 100, 150, and 300 baud. Baudot speeds are 45, 50, 57, 100 baud and the CW speed will run up to 99 WPM.

The program features CW ID, type ahead buffering, multi-speed operation, message buffers, message retrieval from buffer or disk and word processor-like text handling.

Radio Shack TRS80 Software:

Limited number available — call AEA.

*Dr. DX Cartridge Plugs Into C-64 Expansion Port.*

Doctor DX™ by AEA has been described by many experienced DXers as THE MOST EXCITING new product to ever come to Amateur Radio. There is something for everybody in Doctor DX, from the aspiring Novice to the Amateur Extra-Class operator.

DOCTOR DX CAN OFFER MORE FUN THAN ACTUALLY BEING ON THE AIR. With the DDX-64 you can still work DX when the bands are dead, your antennas are down, TVI has you shut down, or when you are relegated to apartment living with no other ham gear. You can also enjoy the propagation that you would otherwise be deprived of because of working or sleeping schedules.

The DDX-64 takes all the mystery out of making CW contacts. It is easy to hook-up and operate and NO PREVIOUS COMPUTER KNOWLEDGE is NECESSARY. This is THE answer for those who have never felt comfortable making CW contacts on the air. You will even learn the actual DX call letter prefixes and asscciated CQWW zones plus the expected times and bands for working particular DX during the peak of the sunspot cycle.

GO ON A DXPEDITION TO ANY PART OF THE WORLD WITH DOCTOR DX. Have you ever wondered what it would be like to work CW DX from another part of the world with a well equipped station? Now you can with Doctor DX. You can go on a DXpedition without leaving the comforts of your own home and avoid all of the expensive travel costs. Experience the thrill every ham has dreamed of for a fraction of the cost of actually making the trip.

DOCTOR DX IS THE ULTIMATE MORSE TRAINER. Utilizing advanced technology from AEA, Doctor DX offers the Morse operator what the Link trainers have offered airplane pilots for years. The skill level for any operator proficient from 5 to 40+ W.P.M. can be greatly enhanced with practice on the DDX-64. Doctor DX consists of a plug-in hardware/software cartridge for the Commodore C-64 computer. A rear mounted phono connector accepts an input from your hand key or electronic keyer. The visual display of a transceiver front panel with human engineered operating controls appear on your TV screen along with instant score updating as you work new stations. Audio from received CW stations (as well as a sidetone following your sending) is monitored through the TV speaker or with a pair of headphones.
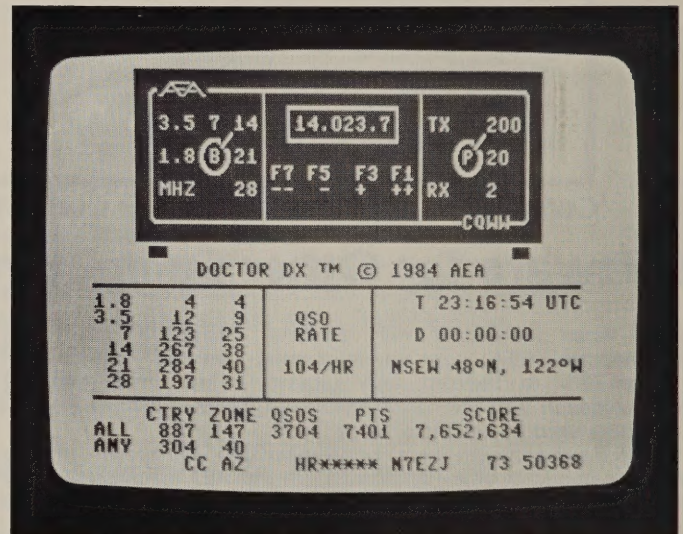
Dr. DX Operating Display Showing Controls, Frequency Display and QSO Progress Record.

DOCTOR DX SIMULATES REAL CW BAND OPERATING CONDITIONS. All the stations you will work using Doctor DX are generated by the computer. As you tune up and down the particular band you have selected, you will hear realistic sounding stations in contact with other stations, plus QRM and QRN similar to actual on-the-air conditions. All call letters heard are totally random (subject to the country's callsign assignment rules), with the guarantee that for each of the 304 possible countries, there is at least one station represented. The speed of the stations operating in the lower band segments is much faster than those operating in the upper band segments and the "operators" are more polished.
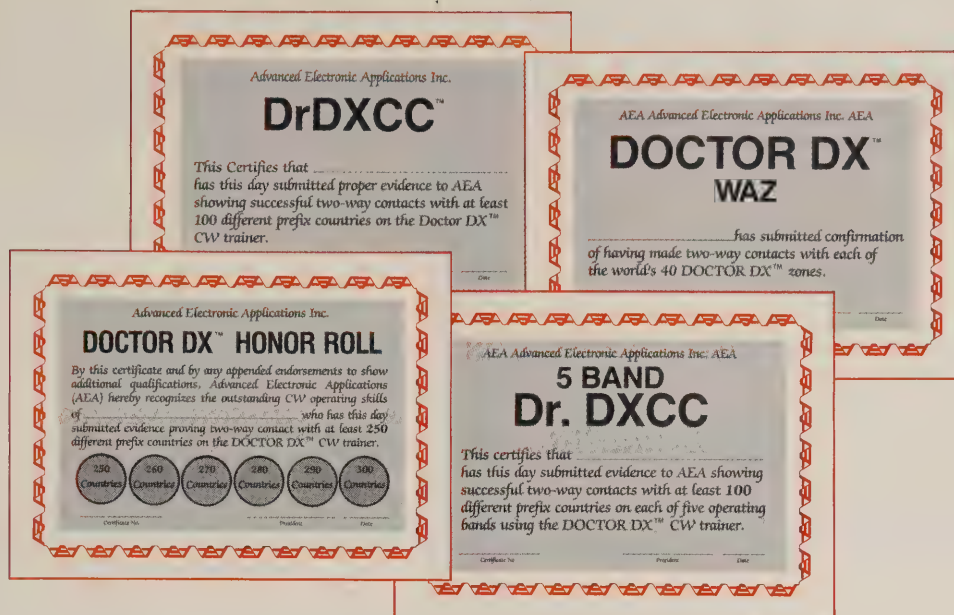
Doctor DX™ Awards.

DOCTOR DX IS THE ONLY ALTERNATIVE TO POOR REAL LIFE PROPAGATION CONDITIONS. The radio propagation programmed for each band represents what you would expect to hear on a good propagation day at the peak of the sunspot cycle with an omni-directional antenna. The propagation follows the internal real-time clock that you set before beginning operation. As an example, the 10 and 15 meter bands are wide open during local daylight hours and closed at night (and vice-versa for 80 and 160 meter bands). The simulated stations you hear (with proper prefixes) are at distances you would expect to hear under normal conditions for the time of day and band selected.

LEARN PROPER CW OPERATOR SKILLS WITH DOCTOR DX. The typical two-way contact exchange involves call letters, signal reports, and CQWW zones (all explained fully in the operator manual). If you miss any part of your QSO, you can ask for and receive a repeat. If you make a mistake, the other station may ask you for a repeat. You may even ask the other station to slow down (QRS) or speed up (QRQ) and he will. Learning proper operating procedures and technique is a natural with the DDX-64. Doctor DX will not reward bad operator habits. Whereas there are numerous means for training people to copy Morse code, the model DDX-64 is the first commercially available trainer that lets you learn good CW operating skills without having to make humiliating on-the-air mistakes. In fact, you can start practicing with the DDX-64 before receiving an FCC license. The DDX-64 is the ideal device for a novice to practice making CW contacts before he ever gets on the air or for the ace contest operator to get into shape before the big weekend. If you do not have Doctor DX on your side, how would you like to compete with someone who "works out with Doctor DX" before the real contest weekend?

With adequate time spent on the DDX-64, you can become a successful DX and contest operator without the need for investing in expensive equipment on which to practice. AEA even offers award certificates to operators that work all zones, 100 countries, 5 band Dr. DXCC, or Doctor DX Honor Roll.

Seeing is believing, Doctor DX is a totally new concept in Amateur Radio that has been under development for over three years at AEA. To properly understand what all the excitement is about, you need to see Doctor DX at your favorite dealer. He should have the DDX-64 in stock now, at a very affordable price when you consider all the equipment you do not need.

TECHNICAL SPECIFICATIONS

IC complement: 7

Power Required: 5 volts at 100 mA (from C-64)

Dimensions: 4½ x 3½ x 1″ (Projects 2⅝″ behind C-64)

Weight: 3 oz.

RCA phono for keyer input

C-64 maximum audio output: 200 mVrms max, 1k ohm source impedance

Prices and specifications subject to change without notice or obligation.

ISOPOLE™ Antennas
by AEA

The IsoPole has built a strong reputation for quality in design and superior performance. Patented IsoPole conical sleeve decouplers offer many design advantages.

All IsoPole antennas yield the **maximum gain attainable** for their respective lengths and a zero degree angle of radiation. Exceptional decoupling results in simple tuning and a significant reduction in TVI potential. Cones offer greater efficiency over obsolete radials which radiate in the horizontal plane. The IsoPole is also more esthetically pleasing to the eye than older obsolete ground plane designs.

The IsoPoles have the broadest frequency coverage of any comparable VHF base station antenna. This means no loss of power output from one end of the band to the other when used with SWR protected solid state transceivers. **Typical SWR is 1.4 to 1, or better, across the entire band!**

A standard Amphenol 50 ohm 50-239 connector is recessed within the base sleeve of all VHF IsoPoles and is fully weather protected. With the factory-tuned matching network located at this connector, we are able to cancel out the impedance lump effects of this so called "UHF" connector. The UHF IsoPoles use type "N" connectors. Additionally, all IsoPole antennas are D.C. grounded. With the IsoPole, you will not experience aggravating changes in SWR with changes in weather. The impedance matching network is weather sealed and designed for maximum legal power. A new insulating material offers superb strength and dielectric properties, plus excellent long-term ultra-violet resistance. All mounting hardware is stainless steel. The decoupling cones and radiating elements are made of corrosion resistant aluminum alloys. The aerodynamic cones are the only appreciable wind load and are attached directly to the support (a standard TV mast which is **not supplied**). The IsoPole has even survived 140 mph storms unscathed. You can buy a mast from your local hardware or Radio Shack store, for less than the shipping cost of a single 10′ mast!

Operating on MARS or CAP? The IsoPole and IsoPole Jr. antennas will typically operate at least ±2 MHz outside the respective ham band without retuning. However, by simple length adjustment, the IsoPoles can be tuned over a wider range outside the ham bands as shown in the SWR charts.

The IsoPole antennas are all impedance matched in the factory so that no field tuning is required. Instead of the typical 25-40 screws, the IsoPole has no more than 5 stainless steel screws to fasten, thereby significantly decreasing the time necessary for assembly and reducing the chance for errors.

Specifications subject to change without notice or obligation.

ISO-440
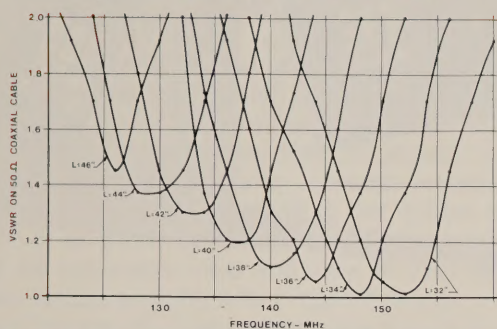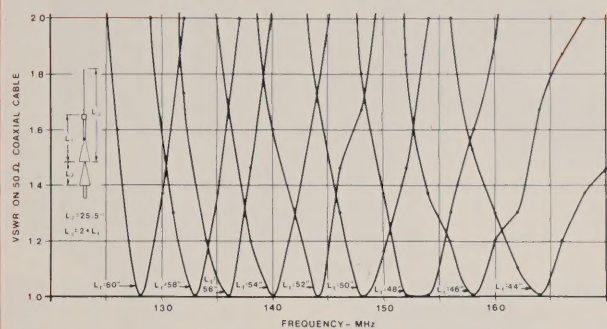
ISO-144
ISO-220

MASTS
NOT SUPPLIED

ISO-144JR
ISO-220JR
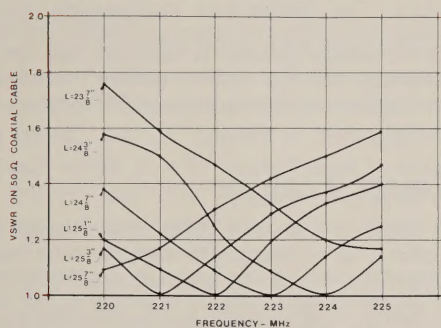
10

ISOPOLE™ VSWR and Radiation Patterns
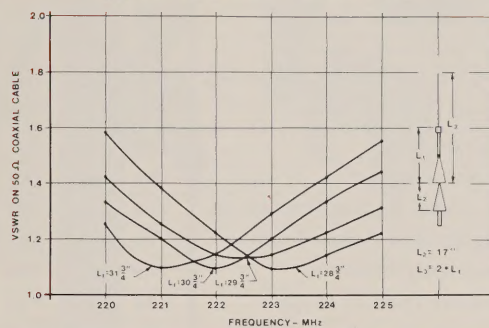
Typical ISO-144 JR VSWR Plot

Typical ISO-144 VSWR Plot

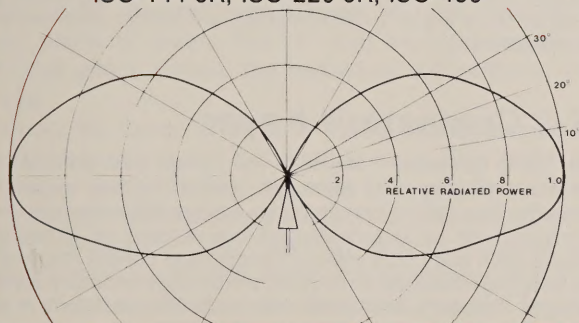### Typical ISO-220 JR VSWR Plot

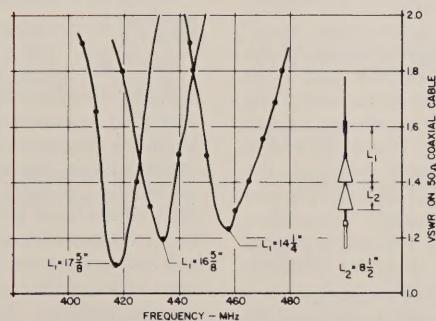### Typical ISO-220 VSWR Plot

Typical Power Pattern
ISO-144 JR, ISO-220 JR, ISO-450

Typical Power Pattern
ISO-144, ISO-220, ISO-440

Typical 450 Mhz VSWR Plot
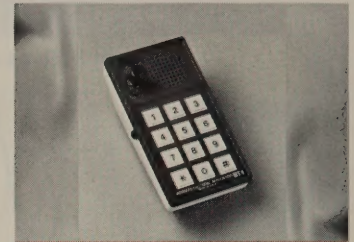
Morse Keyers & Trainers

MM-2 Morse Keyer™

KT-2 Keyer Trainer

CK-2 Contest Trainer

BT-1 Basic Trainer

IMPORTANT KEYER AND/OR TRAINER FEATURES	AEA MM-2	AEA KT-2	AEA CK-2	AEA BT-1
Speed Range (WPM)	2-99	1-99	1-99	18-99
Memory Capacity (Total Characters)	500	N/A	500	N/A
Message Partitioning	Soft	N/A	Soft	N/A
Automatic Contest Serial Number	Yes	N/A	Yes	N/A
Selectable Dot and Dash Memory	Yes	Yes	Yes	N/A
Independent Dot & Dash (Full) Weighting	Yes	Yest	Yes	N/A
Calibrated Speed, 1 WPM Resolution	Yes	Yes	Yes	Yes
Calibrated Beacon Mode	Yes	N/A	No	N/A
Repeat Message Mode	Yes	N/A	Yes	N/A
Front Panel Variable Monitor Frequency	Yes	Yes	Yes	Yes
Message Resume After Paddle Interrupt	Yes	N/A	Yes	N/A
Semi-Automatic (Bug) Mode	Yes	Yes	Yes	N/A
Real-Time Memory Loading Mode	Yes	N/A	Yes	N/A
Automatic Word Space Memory Load	Yes	N/A	Yes	N/A
Instant Start From Memory	Yes	N/A	Yes	N/A
Message Editing	Yes	N/A	Yes	N/A
Automatic Stepped Variable Speed	No	No	Yes	No
2 Presettable Speeds, Instant Recall	No	No	Yes	No
Automatic Trainer Speed Increase	Yes	Yes	N/A	No
Five Letter or Random Word Length	Yes	Yes	N/A	No
Test Mode With Answers	Yes	Yes	N/A	No
Random Practice Mode	Yes	Yes	N/A	Yes
Standard Letters, Numbers, Punctuation	Yes	Yes	N/A	Yes
All Morse Characters	Yes	Yes	N/A	Yes

OPTIONS:

ME-2: 2000 character plug-in Memory Expansion for MM-2 (Factory installed only.)

AC-1: 600 Ma. 12 Volt wall adaptor for all AEA Keyer and Trainer products.

AEA produces the finest Morse keyers and trainers in the world. All AEA keyers operate with any standard keyer paddle and offer selectable monitor tone, selectable dot and dash ratios, full weighting and selectable dot and/or dash memory. In addition, all our keyers offer full, semi-automatic or straight key modes. The keyers and trainers are keypad controlled which significantly reduces the complexity of operation for all the features offered. Each keyer has separate + and − keyed outputs for keying any modern transmitter. All keyers and trainers operate from 12 VDC (or 117 VAC with optional model AC-1 wall adaptor) which makes them ideal for portable operation. AEA microcomputer-based products are all subjected to a full burn-in and test prior to shipment, as well as being designed for maximum R.F. immunity.

MM-2 MorseMatic™

The MM-2 Morsematic Keyer represents the most sophisticated paddle keyer ever designed and features two powerful microcomputers. The Morsematic incorporates virtually all the features (except the preset and stepped variable speeds) of both the CK-2 and KT-2 shown above. In addition, the MM-2 offers an exclusive automatic beacon mode which is invaluable for meteor scatter, moonbounce scheduling, or beacon operation.

KT-2 Keyer Trainer

The KT-2 Keyer-Trainer is a computerized keyer plus a Morse proficiency trainer. It is designed to increase your existing code as quickly as possible. The unit can be set for beginning practice speed, ending practice speed, and duration of practice. The microcomputer does all the rest by gradually increasing the speed during the practice time selected. You can even select between fast code (Farnsworth) or slow code methods. The characters are sent in 5 letter groups, or random word lengths. Two levels of difficulty can be selected; common Morse characters or all English Morse characters. A 24,000 character answer book is provided for the 10 separate starting positions. There is also a random practice mode for which no answers are available.

CK-2 Contester™ Keyer

The CK-2 Contester™ Keyer is the lowest cost automatic keyer available featuring an automatic serial number generator for contesting. The CK-2 keyer features a large 500 character message memory that can be soft-partitioned into as many as 10 sections. An exclusive AEA edit mode makes it possible to correct mistakes made while entering messages or to insert words into previously established messages. Two different speeds can be set for fast recall in addition to a stepped variable speed control. The CK-2 features an automatic message repeat mode with variable delay-before-repeat for automatic CQ transmissions or TVI testing.

BT-1

The BT-1 Basic Trainer is a hand-held computerized unit which teaches the code one character at a time at 17 or 20 words per minute. The BT-1 contains a self-paced training program that allows serious students the possibility of learning Morse to 20 wpm in as little as one month! Each character represents a separate practice session in which the character is first introduced by itself, and then presented 50% of the time along with all previously learned characters. There are no tapes to memorize, wear out, or break. No programming skills are necessary; the BT-1 is very easy to use. The tone oscillator can also be keyed for sending practice. An earphone jack is provided for private listening. The BT-1 will go as high as 99 WPM in 1 WPM increments.

Accessories

HOT ROD™ ANTENNAS FOR 2 METERS and 220MHz

The AEA HR-1 Hot Rod antenna is an end-fed halfwave dipole which is shorter, lighter, and offers more gain than a ⅝ wave HT antenna. Extended, the HR-1 gives typically 10db more gain than the popular "rubber duck" helical quarter wave antenna. Collapsed, performance is roughly equivalent to the "rubber duck". The SWR of an extended Hot Rod will be extremely low over the full two meter band and may be used as a 25 watt base station antenna with excellent results.

You will find the HR-1 out performs the popular ⅝ wave telescopic antennas when mounted on a HT and in many other installations as well. On a HT, it is 2.2 db better. Why does the half-wave HR-1 out perform a ⅝ wave? There are two basic reasons:

First: A ⅝ wave provides more gain than a ½ wave **if it is located directly over a flat, infinite ground plane.** Unfortunately, the HT is almost never located in such a way. As a result, the RF current in the antenna base (which is much larger in a ⅝ wave than a ½ wave) spills over onto the HT and the operator, causing them to become "part of the antenna". This current would normally flow onto the missing ground plane. The HT and the operator are "high impedance" and lossy compared to the ground plane and as a result the ⅝ wave antenna pattern is weak and distorted compared to ground plane operation. In contrast, the ½ wave feedpoint impedance is higher (1000 ohms compared to 50 ohms for ⅝ wave) and the RF antenna base current is much lower. Consequently, the spill over is lower and the need for a ground plane is lower. The HT and the operator have much less effect. Hence, the half-wave out performs the ⅝ wave.

Second: the lower ⅛ wave of the ⅝ carries an out-of-phase current compared to the top ½ wave. The field from the ⅛ wave subtracts from the main field, resulting in less gain. Why do manufacturers make ⅝ wave instead of ½ wave HT antennas? The matching network required for the mostly resistive 50 ohm feedpoint impedance of the ⅝ wave is much easier to make than that required for the 1000-1500 ohm feedpoint impedance of the ½ wave. AEA has solved the matching problem in the ½ wave very effectively, and at a breakthrough in cost. A matching network in the base of the HR-1 transforms the drive impedance to 50 ohms to match the transceiver. The resulting performance of the half-wave HR-1 Hot Rod antenna is significantly better than a telescopic ⅝ wave antenna.

The Hot Rod antenna is available for the amateur two meter band (HR-1), the commercial VHF business/marine band (HR-3) and the amateur 220 MHz band (HR-2).

PSK-1 POWER SPEAKER

The AEA model PSK-1 Power Speaker is made for applications requiring good communications quality audio from receivers that do not have enough audio output power or a large enough speaker. The PSK-1

will interface with virtually any receiver output impedance and deliver up to 2½ watts of audio power from a 4 inch 8 ohm speaker. The Power Speaker may be mounted with the metal bracket supplied or is light enough to be mounted with a few strips of Velcro. The PSK-1 operates from 12VDC at 500 ma (such as the AEA model AC-1 for base station use.) The PSK-1 is a perfect adjunct to the Doctor DX™ for use with CRT monitors having no audio amplifier and speaker.

AC-1

The AC-1 nominal 12VDC wall adaptor is a suitable power source for all AEA products requiring 12 VDC at 600 ma or less current. The AC-1 comes with a 6 foot power cord and a standard 2.1 mm (center pin +) coaxial power plug that mates with all the AEA products. The AC-1 can also be used for any load requiring filtered, but unregulated nominal 12 VDC at 600 ma or less.

AC-4

Same as AC-1 except 1 amp output.

DC-1

The DC-1 is a fused cable with a standard cigarette lighter plug on one end and a standard 21 mm (center pin +) coaxial power plug on the other end. The DC-1 offers mobile 12VDC operation for any of our keyers or trainers.

Advanced Electronic Applications, Inc.
P.O. Box C-2160 Lynnwood, WA 98036

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